In the Claims:

1-18 (cancelled)

19. (currently amended) In an injection molding system, a flow mixer comprising:

a mixer bushing inserted in a bore of a hot runner manifold, the mixer bushing having a flow inlet communicating with a melt channel in the manifold, an exit oriented approximately perpendicular to the flow inlet, and an internal surface between the flow inlet and exit on which a helical channel is formed to communicate a flowing melt from the inlet to the exit;

a valve stem slidably inserted in said mixer bushing coaxially with the helical channel and cooperating with the helical channel such that the flowing melt contacts the valve stem as it flows along the helical channel, said internal surface tapering such that a gap between said valve stem and lands adjacent said helical channel gradually increases in a direction from said inlet to said outlet;

wherein in use, said flowing melt is transitioned from circular flow to annular flow as it travels from said inlet to said exit.

20. (previously presented) The flow mixer of claim 19, wherein said helical channel reduces in cross-sectional area in a direction from said inlet to said exit.

21-22. (cancelled)

23. (previously presented) The flow mixer of claim 19, further comprising a locating pin for maintaining alignment of said inlet to said melt channel.

24. (previously presented) The flow mixer of claim 19, further comprising a piston housing rigidly affixed to said mixer bushing, said piston housing containing a piston connected to a top distal end of said valve stem, said piston operative inside said piston housing to move said valve stem to start and stop flow of the melt through a nozzle outlet.

25-34 (cancelled)

35. (currently amended) In an injection molding system, a flow mixer in the stream of a flowing melt comprising:

a mixer bushing inserted in a bore of a hot runner manifold;

a helical channel formed on an inside surface of said mixer bushing, said helical channel communicating said flowing melt from a melt channel of said hot runner manifold to a flow exit, wherein said flow exit exhibits a predetermined change in flow direction as said flowing melt travels from said melt channel to said flow exit;

a pin inserted co-axially in said helical channel which at least initially directs substantially all of the flowing melt into said helical channel, said pin being disposed in said helical channel to cooperate with the helical channel such that the flowing melt contacts the pin as it flows along the helical channel, and to leave a gap between said pin and at least a portion of lands adjacent said helical channel, said gap gradually increasing in a direction from said flow inlet to said exit;

wherein the flowing melt is transitioned from circular flow to substantially annular flow ~~exhibits substantially uniform cross-sectional velocity and the formation of stagnation points has been substantially reduced~~ when the flowing melt reaches said exit.

36. (cancelled)

37. (original) The flow mixer of claim 35 wherein said exit communicates said flowing melt to an injection molding nozzle.

38. (original) The flow mixer of claim 37 wherein said injection molding nozzle is a hot tip nozzle.

39. (original) The flow mixer of claim 35, further comprising a locating pin for maintaining alignment of said melt channel to said helical channel.

40. (original) The flow mixer of claim 35, wherein said helical channel gradually

decreases in cross-sectional area as said melt travels through said helical channel.

41. (original) The flow mixer of claim 35 further comprising a cover and a plurality of fasteners rigidly affixing said mixer bushing to said hot runner manifold.

42. (currently amended) In an injection molding system having a heated hot runner manifold with a primary melt channel formed therein, an injection nozzle comprising;

a mixer bushing having a flow inlet, an exit oriented approximately perpendicular to the flow inlet, and an internal surface between the flow inlet and exit on which a helical channel is formed;

a nozzle housing co-axially located around said mixer bushing and having a melt channel in fluid communication with said flow inlet and said primary melt channel; and

a movable valve stem inserted co-axially through said helical channel for selectively starting and stopping a flowing melt, said valve stem being disposed in said helical channel to cooperate with the helical channel such that the flowing melt contacts the valve stem as it flows along the helical channel, and to leave a gap between said valve stem and at least a portion of lands adjacent said helical channel, said gap gradually increasing in a direction from said flow inlet to said exit.

43. (cancelled)

44. (previously presented) The injection nozzle of claim 42, wherein a melt passageway in said mixer bushing is located between said primary melt channel and said melt channel.

45. (previously presented) The injection nozzle of claim 42, further comprising a locator affixed between said nozzle housing and said mixer bushing thereby maintaining alignment of said melt channel to said flow inlet.